

On a Chilean Example of Pterodela pedicularia, L., with doubly abnormal Neuration. By ALFRED GIARD, Professor at the Sorbonne.

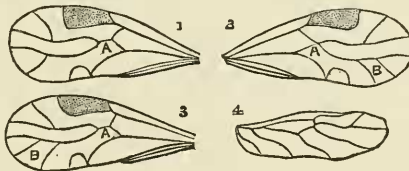
In the numerous consignments which our colleague Mr. F. Lataste has kindly sent me for the study of *Margarodes vitium* I have found at different times the larvæ, nymphs, and perfect insects of a Psocid which is common in Chili on old vine-stocks, especially at Caillihue and Santa Rita. This is *Cecilius pedicularius*, L., which Kolbe has made the type of the subgenus *Pterodela*.

The species is widely distributed in Europe on old wood of various kinds and even in dwellings, where the imago is seen from the end of August to about the 15th of October. In Chili the perfect insect commences to appear about the month of December, and at this period there still exist many untransformed larvæ.

These Chilean examples do not differ from those of the old world. Their size is perhaps a little less and the pterostigma a little more cloudy. It seems to me evident that this Psocid has been introduced into Chili with some vegetable débris, perhaps with the vines themselves. It is not mentioned in the list of Neuroptera in C. Gay's 'Histoire Naturelle du Chili.'

By a singular coincidence the first adult example which I received from Caillihue, a male, presented an abnormal neuration, and abnormal in a different manner in each of the two anterior wings, so that I was some time in recognizing our common *Cecilius pedicularius*, L., and my doubts only vanished later when M. Lataste sent me fresh and perfectly normal specimens.

The study of teratological cases in the neuration of insects presents considerable interest from the point of view of biological philosophy. It is important not to lose the documents which nature has furnished us with in so unusual a manner, and for this reason I have thought it advisable to describe and carefully reproduce the wings of the abnormal *Cecilius* of Chili.



If we compare the left wing of the abnormal specimen (fig. 1) with the left wing of a normal individual (fig. 3), we see that the second posterior marginal cellule (B) is wanting, the median nervure sending only one branch to the margin of the wing instead of two. This is a simplification of the neuration which is only met with in the normal state in the inferior wing in the Psocids (*cf.* fig. 4, the inferior wing of *Cecilius pedicularius*).

De Sélys Longchamps has described an analogous monstrosity in a *Psocus bipunctatus*, Latr., from the Rambur collection. In the genus *Psocus* there are normally four posterior marginal cellules. In

the abnormal specimen the left superior wing has only three marginal cellules instead of four, the most basal being absent. The monstrosity was thus of the same nature and affected the same side as in our *C. pedicularius* *.

The right wing of our teratological example possesses, indeed, the second posterior marginal cellule, but it is abnormal from another point of view. While in the normal condition the branch of the radial nervure and the median nervure are united over a certain extent of their course (figs. 1 and 3, A), in the abnormal wing these two nervures touch at a single point (fig. 2, A), thus realizing a condition which we find normally in certain Psocids, notably in the genus *Mesopsocus*, Kolbe.

De Sélvs Longchamps has already pointed out that a similar character would be insufficient to separate *Mesopsocus* from *Elipsocus*; certain examples of *Elipsocus unipunctatus*, Müll., present, in fact, a disposition of the nervures which is intermediate between the type of this species and *Elipsocus laticeps*, Kolbe †.

The teratological variations in the reticulation of the wings of insects appear to be abrupt and in discontinuity with the normal condition. If they are preserved by heredity they constitute new varieties, sometimes even new genera or species if other characters are modified in addition, so as to allow of a more complete differential diagnosis. Starting from this point, certain naturalists have maintained that all species have a similar origin, and that the action of the primary or secondary factors of evolution, Lamarkism and Darwinism, should give place to this new conception of the descent of living beings by discontinuous teratological modifications.

This, we think, is an inexact and exaggerated interpretation of facts which in themselves are highly important. The production of species by a discontinuous process remains a particular case whose importance may have been undervalued, but on which it is not advisable to found a general law.

In reality the different types of neuration represent so many stable states of equilibrium between which no continuous gradual passages can be established. The forms intermediate to these states of equilibrium are not realized, because they do not correspond to conditions of sufficient stability. To make use of a trivial comparison, *one cannot show the half or any fraction whatever of one step of the ladder*. In similar cases the progress is very discontinuous or, what comes to the same thing, only manifests itself in a discontinuous manner. But we cannot derive from these facts any argument against the formation of species by natural selection, still less can we find there the sole and complete solution of the complex problems of metamorphism.—*Actes de la Société Scientifique de Chili*, t. v. 1895, 1^{re} livraison, pp. 19–21. (Communicated by the Author.)

March 8, 1895.

* De Sélvs Longchamps, "Revision des Psocides décrites par Rambur," Ann. Soc. Entomol. de Belgique, t. xvi. p. 6 (1873).

† "Catalogue raisonné des Orthoptères et des Névroptères de Belgique," Ann. Soc. Entomol. de Belgique, t. xxxii. p. 128 (1888).